

### Abstract

Animal waste such as fecal material from swine, chicken, turkey, and cattle is converted into useful forms such as fertilizer, other types of soil builders, and even 5 nutrient feed additives. Devices, systems, and methods are provided that allow economical conversion and in many instances, alleviate the production and release of undesirable gases such as sulfide and ammonia. In one embodiment, undesirable anaerobic and facultative anaerobic bacteria are killed at a greater rate than desirable soil compatible aerobic bacteria. The use of low temperature killing 10 diminishes off gassing commonly associated with other techniques, and the use of gas trapping additives such as zeolites provides enhanced soil building qualities such as slow release of nitrogen and slow release of moisture to soil. The methods allow convenient adjustment of composition, allowing conversion of waste into tailored designer fertilizer suited for particular soils. Other embodiments provide 15 other soil building qualities as well as nutrient qualities for feedstock used in animal husbandry such as aquaculture.